Fifth ML-INFN Hackathon: Advanced Level

Report of Contributions

Contribution ID: **1** Type: **not specified**

Welcome and introduction

Monday, 13 November 2023 14:25 (15 minutes)

Presenters: LIZZI, Francesca (Istituto Nazionale di Fisica Nucleare); ANDERLINI, Lucio (Istituto Nazionale di Fisica Nucleare)

Session Classification: Cloud Infrastructure for Interactive Analysis and Machine Learning

Contribution ID: **2** Type: **not specified**

INFN Pisa Computing Centre

Monday, 13 November 2023 14:40 (20 minutes)

Presenter: MAZZONI, Enrico (Istituto Nazionale di Fisica Nucleare)

Session Classification: Cloud Infrastructure for Interactive Analysis and Machine Learning

Contribution ID: **3**　　　　　　　　　　　　　　　　　　Type: **not specified**

Infrastructure, Platform and Software as Services in INFN Cloud

Monday, 13 November 2023 15:00 (20 minutes)

Presenter: GIOMMI, Luca (Istituto Nazionale di Fisica Nucleare)

Session Classification: Cloud Infrastructure for Interactive Analysis and Machine Learning

Contribution ID: **4**   Type: **not specified**

A scientific perspective on Cloud scalability

Monday, 13 November 2023 15:20 (40 minutes)

Presenters: SPIGA, Daniele (Istituto Nazionale di Fisica Nucleare);   CIANGOTTINI, Diego (INFN Perugia)

Session Classification: Cloud Infrastructure for Interactive Analysis and Machine Learning

Contribution ID: **5**   Type: **not specified**

Containerizing ML applications for development, training and deployment

Monday, 13 November 2023 16:40 (20 minutes)

Presenter: ANDERLINI, Lucio (Istituto Nazionale di Fisica Nucleare)

Session Classification: Cloud Infrastructure for Interactive Analysis and Machine Learning

Contribution ID: **6** Type: **not specified**

Hands-on ML_INFN instances, with Jupyter and beyond

Monday, 13 November 2023 17:00 (1 hour)

Presenter: ANDERLINI, Lucio (Istituto Nazionale di Fisica Nucleare)

Session Classification: Cloud Infrastructure for Interactive Analysis and Machine Learning

Contribution ID: **7**　　　　　　　　　　　　　　　　　　　Type: **not specified**

Introduction to Generative models

Tuesday, 14 November 2023 10:00 (40 minutes)

Presenters: VASELLI, Francesco (Istituto Nazionale di Fisica Nucleare); BARBETTI, Matteo (INFN Firenze); CAPELLI, Simone (Istituto Nazionale di Fisica Nucleare)

Session Classification: Advanced Machine Learning Lectures

Contribution ID: **11**

Type: **not specified**

Hackathon: Anomaly detection with Autoencoders in CMS Data Quality Monitoring

Tuesday, 14 November 2023 14:00 (2 hours)

Presenters: PAPANASTASSIOU, Alkis; CAMAIANI, Benedetta (Istituto Nazionale di Fisica Nucleare)

Session Classification: Hackathon exercises: Tuesday

Contribution ID: **14** Type: **not specified**

Introduction to CNN, Autoencoders and U-Net

Wednesday, 15 November 2023 11:20 (1 hour)

Presenter: LIZZI, Francesca (Istituto Nazionale di Fisica Nucleare)

Session Classification: Advanced Machine Learning Lectures

Contribution ID: **15**   Type: **not specified**

Introduction to solving differential equations with machine learning

Wednesday, 15 November 2023 09:00 (1h 40m)

Presenters: BOMBINI, Alessandro (Istituto Nazionale di Fisica Nucleare); ANDERLINI, Lucio (Istituto Nazionale di Fisica Nucleare)

Session Classification: Advanced Machine Learning Lectures

Contribution ID: 16   Type: **not specified**

Hackathon: Anomaly detection with Autoencoders in CMS Data Quality Monitoring

Tuesday, 14 November 2023 16:40 (1h 20m)

Presenters: PAPANASTASSIOU, Alkis; CAMAIANI, Benedetta (Istituto Nazionale di Fisica Nucleare)

Session Classification: Hackathon exercises: Tuesday

Contribution ID: **17**　　　　　　　　　　　　　　　　　　Type: **not specified**

Hackathon: Solving differential equation with deep learning

Wednesday, 15 November 2023 14:00 (2 hours)

Presenters: BOMBINI, Alessandro (Istituto Nazionale di Fisica Nucleare); ANDERLINI, Lucio (Istituto Nazionale di Fisica Nucleare)

Session Classification: Hackathon exercises: Wednesday

Contribution ID: **18** Type: **not specified**

Hackathon: Lung Sementation on Chest X-Ray images with U-Net

Wednesday, 15 November 2023 14:00 (2 hours)

Presenters: POSTUMA, Ian (Istituto Nazionale di Fisica Nucleare); Mr ZAFARANCHI, Arman (UniPi); Dr MARINI, Lorenzo (Istituto Nazionale di Fisica Nucleare)

Session Classification: Hackathon exercises: Wednesday

Contribution ID: **20** Type: **not specified**

An overview of Machine Learning in Medicine and Medical Physics

Thursday, 16 November 2023 09:50 (50 minutes)

Presenter: RETICO, Alessandra (Istituto Nazionale di Fisica Nucleare)

Session Classification: Ongoing developments and future scenarios

Contribution ID: **22**   Type: **not specified**

Final remarks and closing

Thursday, 16 November 2023 12:40 (20 minutes)

Presenters: LIZZI, Francesca (Istituto Nazionale di Fisica Nucleare);   ANDERLINI, Lucio (Istituto Nazionale di Fisica Nucleare)

Session Classification: Ongoing developments and future scenarios

Contribution ID: **23** Type: **not specified**

An overview of Machine Learning applications in HEP

Thursday, 16 November 2023 11:20 (40 minutes)

Presenters: RIZZI, Andrea (INFN Pisa); RIZZI, Andrea (Istituto Nazionale di Fisica Nucleare)

Session Classification: Ongoing developments and future scenarios

Contribution ID: **24**   Type: **not specified**

Social Dinner

Contribution ID: **26**   Type: **not specified**

Introduction to Anomaly detection with Autoencoders in CMS Data Quality Monitoring

Tuesday, 14 November 2023 09:00 (1 hour)

Presenters: PAPANASTASSIOU, Alkis; CAMAIANI, Benedetta (Istituto Nazionale di Fisica Nucleare)

Session Classification: Advanced Machine Learning Lectures

Contribution ID: 28

Type: **not specified**

Welcome by the local authorities

Session Classification: Cloud Infrastructure for Interactive Analysis and Machine Learning

Contribution ID: **29** Type: **not specified**

Hackathon: Transformers and Visual Transformer

Tuesday, 14 November 2023 14:00 (2 hours)

Presenters: GIAGU, Stefano (Istituto Nazionale di Fisica Nucleare); VASELLI, Francesco (Istituto Nazionale di Fisica Nucleare)

Session Classification: Hackathon exercises: Tuesday

Contribution ID: **30** Type: **not specified**

Hackathon: Transformers and Visual Transformer

Tuesday, 14 November 2023 16:40 (1h 20m)

Presenters: VASELLI, Francesco (Istituto Nazionale di Fisica Nucleare); GIAGU, Stefano (Istituto Nazionale di Fisica Nucleare)

Session Classification: Hackathon exercises: Tuesday

Contribution ID: **31** Type: **not specified**

Coffee break

Tuesday, 14 November 2023 16:00 (40 minutes)

Session Classification: Hackathon exercises: Tuesday

Contribution ID: **32**   Type: **not specified**

Hackathon: Solving differential equation with deep learning

Wednesday, 15 November 2023 16:40 (1h 20m)

Presenter: BOMBINI, Alessandro (Istituto Nazionale di Fisica Nucleare)

Session Classification: Hackathon exercises: Wednesday

Contribution ID: **33** Type: **not specified**

Hackathon: Lung Sementation on Chest X-Ray images with U-Net

Wednesday, 15 November 2023 16:40 (1h 20m)

Presenters: ZAFARANCHI, Arman (UniPi); POSTUMA, Ian (Istituto Nazionale di Fisica Nucleare); Dr MARINI, Lorenzo (Istituto Nazionale di Fisica Nucleare)

Session Classification: Hackathon exercises: Wednesday

Contribution ID: **34**   Type: **not specified**

Introduction to Transformers

Tuesday, 14 November 2023 11:20 (1h 40m)

Presenter: GIAGU, Stefano (Istituto Nazionale di Fisica Nucleare)

Session Classification: Advanced Machine Learning Lectures

Contribution ID: **35** · · · · · · · · · · · · Type: **not specified**

Quantum Machine Learning and its applications to HEP

Thursday, 16 November 2023 12:00 (40 minutes)

Presenter: SESTINI, Lorenzo (Istituto Nazionale di Fisica Nucleare)

Session Classification: Ongoing developments and future scenarios

Contribution ID: **36**   Type: **not specified**

AI in streaming readout data acquisition and real-time inference

Thursday, 16 November 2023 09:00 (25 minutes)

Presenter: BATTAGLIERI, Marco (Istituto Nazionale di Fisica Nucleare)

Session Classification: Ongoing developments and future scenarios

Contribution ID: **37**   Type: **not specified**

Hands-on generative models

Wednesday, 15 November 2023 12:20 (30 minutes)

Presenters: VASELLI, Francesco (Istituto Nazionale di Fisica Nucleare); BARBETTI, Matteo (INFN Firenze); CAPELLI, Simone (Istituto Nazionale di Fisica Nucleare)

Session Classification: Advanced Machine Learning Lectures

Contribution ID: **38** Type: **not specified**

Social dinner

Wednesday, 15 November 2023 19:30 (4 hours)

Contribution ID: **39**   Type: **not specified**

Hands-on: streaming readout

Thursday, 16 November 2023 09:25 (25 minutes)

Presenter: ROSSI, Fabio

Session Classification: Ongoing developments and future scenarios